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Global Production Arrangements in Canada – Initial Evidence from the Survey of Innovation and Business Strategy

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. not available for any reference period
.. not available for a specific reference period
... not applicable
0 true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

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Abstract

The increased pace of globalization has brought about many changes in both the Canadian and world economies. One important change has been the increased prevalence of global value chains which sees production processes spread out around the globe, across vertically integrated multinationals or via arm's length trade. This paper focuses on two types of global production arrangements, namely, the case of merchanting and of goods send abroad for processing, with the limiting case of factoryless goods producers. Using the results of the 2009 and 2012 Survey of Innovation and Business Strategy, this report aims to provide an indication of the degree and nature of outsourcing among Canadian firms, with respect to these global production arrangements.

Introduction

The increased pace of globalization has brought about many structural changes in both the Canadian and world economies. There are now fewer barriers to international trade and increased financial investment across borders than ever before. One important change has been the increased prevalence of global value chains which sees production processes spread out around the globe, across vertically integrated multinationals or conducted via arm's length agreements. The search for cost reduction and profit maximization by firms has made it increasingly common for manufacturers to outsource parts or even all of their production process to different companies which can be located in any number of different countries. It is important for economic policy analysis and research that the increased flow of goods across international borders be properly measured.[1]

This paper takes an initial look at the incidence of global production arrangements in the Canadian economy. It focuses on two types of these arrangements:

Merchanting: When a company purchases and subsequently sells a good abroad without it ever entering the company's resident economy; and

Goods sent abroad for processing: When a company outsources part of their production process to another country, as well as the extreme case of *factoryless good production (FGP)* when a company owns the intellectual property of a product but outsources the entire production process.

This study makes use of the 2009 and 2012 Survey of Innovation and Business Strategy (SIBS)[2] from Statistics Canada, and examines the degree and nature of such activities among Canadian firms.

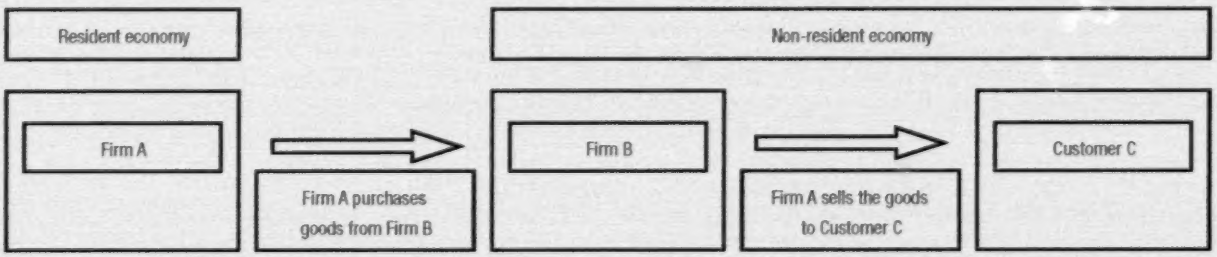
Global production arrangements

The two main types of global production arrangements are a) merchanting and b) goods sent abroad for processing. The extreme case of this last arrangement, when all production is outsourced, is known as factoryless goods production and can be seen as a third type of arrangement.

Merchanting

Under the merchanting arrangement, the domestic firm purchases a good abroad and subsequently re-sells the good without the product entering the resident firm's territory. The merchant does not own the intellectual property, or any other input materials, associated with the good and is essentially engaging in a global distribution activity. As an example of this type of arrangement, suppose that country A buys books from country B and then subsequently sells those books to country C without them ever entering country A's territory. The books in question were produced by firms in country B who own all the inputs into the production process including all intellectual property.[3] In this example, country A is simply engaged in trade with both country B and C in a merchanting arrangement (see Figure 1).

Figure 1
Merchanting



1. This in turn, requires that the Balance of Payments (BOP) and the System of National Accounts (SNA), which are internationally recognized accounting systems, properly measure these international flows as well.
2. Statistics Canada, Survey of Innovation and Business Strategy (2012) www23.statcan.gc.ca:81/imdb/p2SV.pl?Function=getSurvey&lang=en&db=imdb&adm=8&dis=2&SDDS=5171
3. Refer to Balance of Payments Manual 6, Box 10.1 for more detailed examples.

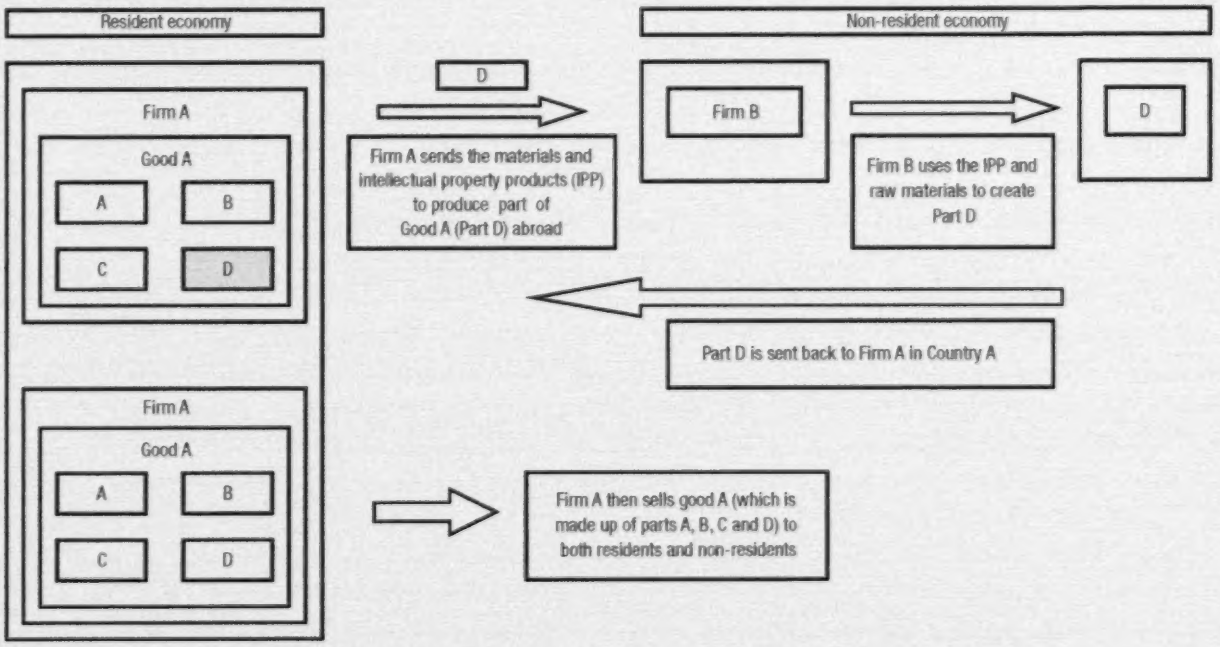
Merchanting has grown strongly in the last decade in select small open economies, such as Ireland and Switzerland, with the potential to become an important driver of these countries' current accounts. Because merchanting firms tend to reinvest their earnings abroad to expand their international activities, this practice has the potential to raise national savings in the home country without increasing domestic investment.[4] It is therefore important to understand to what extent Canadian firms are engaging in this practice.

Goods sent abroad for processing

Under the goods sent abroad for processing arrangement, part of the production process is contracted out to a firm in a different country. Under this type of production arrangement, the resident firm owns the input materials as well as the intellectual property associated with the production process and is simply purchasing manufacturing services from abroad to transform the inputs into another product. A common example is that of an athletic shoe.[5] Suppose the production of the shoe can be split up into 3 parts: a) the top of the shoe (the upper); b) the midsole which is the most important part of the shoe as it is the part that cushions and protects the foot; and c) the outsole. Suppose further that the resident firm creates a new innovative design for the midsole and that production of this part of the shoe is done at its domestic manufacturing facility. The firm, however, decides that it would be more cost effective to send the midsole it just created, along with the other materials (the upper and outsole) to another country for final assembly. The resident firm retains ownership of the input materials and of the intellectual property product throughout the entire production process. When the finished shoe is returned, the resident firm pays a processing fee to the non-resident firm who assembled the parts. The shoe is then marketed and sold by the resident firm who owns the output and receives all the revenues for the sale. It is clear in this example that the resident is the economic owner of the material, the intellectual property and the final output associated with the product.

With this production arrangement there could be various degrees of transformation done in the resident country. Part of the product could be assembled in the resident economy; such as was the case in the example above, or all of the production could be done abroad. What is important is the ownership of the materials which are sent abroad for processing. The extreme case where no production is done in the resident economy and where the resident firm may or may not own the input materials is known as factoryless goods production.

Figure 2
Goods sent abroad for processing

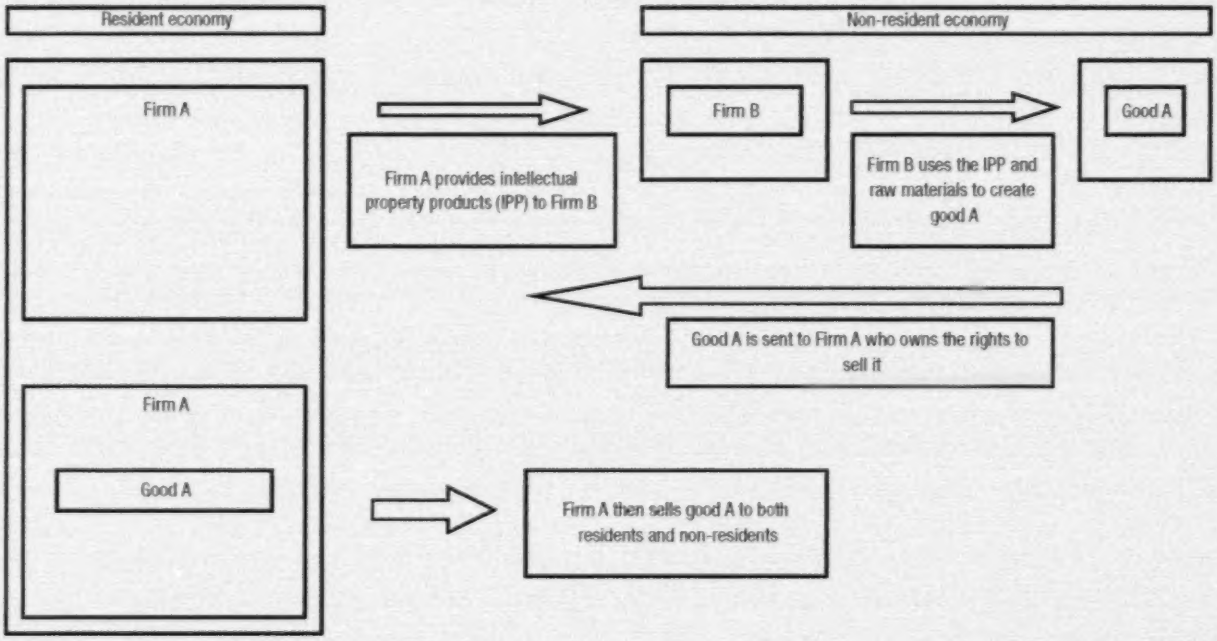

Resident economy
Non-resident economy
Firm A
Good A
A
B
C
D
D
Firm A sends the materials and intellectual property products (IPP) to produce part of Good A (Part D) abroad
Firm B
Firm B uses the IPP and raw materials to create Part D
D
Part D is sent back to Firm A in Country A
Firm A
Good A
A
B
C
D
Firm A then sells good A (which is made up of parts A, B, C and D) to both residents and non-residents

4. Beusch et al. Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute, Merchanting and Current Account Balances, Working Paper No. 140.
5. United Nations Economic Commission for Europe, Conference of European Statisticians, prepared by the Task Force on Global Production, Guide to measuring global production (January 8, 2014).

Factoryless goods producer

The factoryless goods producer (FGP) is an extreme case of goods sent abroad for processing, where the physical transformation of the goods is 100% outsourced. An FGP arrangement occurs when a resident firm owns the intellectual property (blue prints, technical knowledge, etc.) used in the production process but does not have the physical assets (e.g., buildings, machines) or labour force required to transform the intermediate inputs into the output they are selling. In such a case, the firm must outsource the entire production process to another firm (the firm could be either in the same country or abroad). With regards to FGP activity, this paper is concerned only with the latter, global arrangement, where the goods enter another economy. For example, consider a clothing manufacturer who has designed a new style of shirt. All of the research and development (R&D) and design work was done by this firm (firm A) in its resident country (country A). Firm A decides that it would be more cost effective to have the shirt produced in country B through another firm (firm B). Firm B uses the design provided by firm A to produce this new shirt and then returns the shirt back to firm A. Because firm A owns the intellectual property associated with this shirt, it only pays firm B for the cost of production. Moreover, firm B is contractually obliged to firm A in that it is unable to sell the shirt to any other entities.

Figure 3
Factoryless goods production


Resident economy
Non-resident economy
Firm A
Firm B
Good A
Firm A provides intellectual property products (IPP) to Firm B
Firm B uses the IPP and raw materials to create good A
Good A is sent to Firm A who owns the rights to sell it
Firm A
Good A
Firm A then sells good A to both residents and non-residents

These global production arrangements have the potential to cause problems for the measurement of international trade flows as well as global and domestic production. Current international work and recommendations are summarized in Appendix 1. The remainder of this paper is concerned with measuring these arrangements in Canada.

Measuring global production in Canada

The following section investigates the prevalence of merchanting and the goods sent abroad for processing arrangement, as well as the extreme case of factoryless goods production in Canada by examining Statistics Canada survey and administrative data. This will yield a better understanding of these production arrangements and their potential impact on Canadian economic statistics.

Data and methodology

Data collected through the Survey of Innovation and Business Strategy (SIBS) were used to help shed light on the prevalence of global production arrangements in Canada. This survey is conducted on an occasional basis, with data available for two reference years, 2009 and 2012. In 2012, the SIBS had a sample size of roughly 7,500 enterprises and a response rate of nearly 60%. A similar response rate and sample size were achieved in 2009. Moreover, the survey is designed to produce representative estimates of Canadian businesses with at least $250,000 in revenues and 20 employees in 14 main sectors of the economy, including wholesale trade and manufacturing. Its sample stratification also supports detailed analysis of industries and firm size classes.

The survey has three modules, with one being concerned with global value chains. It is this section of the SIBS that will allow for the analysis of the incidence of global production in Canada. The questions ask respondents whether they outsource their production process, where their head office is located, whether most of their business decisions are made within Canada or abroad and whether or not they engage in merchanting activities.

The SIBS data is collected in such a way as to facilitate linkages with other survey and administrative databases. For the purpose of this analysis, the SIBS data has been linked to various administrative tax databases, namely, corporate taxation statistics (T2) and corporate payroll files (PD7) datasets. This linkage allows for the analysis of the size of global production arrangements in terms of sales, profits, assets, and employment figures.

The data is also weighted using the SIBS final weights variable. This is done in order to make generalizations about the total Canadian economy. Doing this assumes that if an enterprise is engaged in these global production arrangements, then all units it represents in the sample would also be engaged in these activities. This assumption may not hold in practice, nonetheless, the figures using both weighted and un-weighted data yield nearly identical results.

Arrangement 1: Merchanting

The occurrence of merchanting in Canada can be obtained from the SIBS data using question 35 of the questionnaire. The responses to this question will produce both a percentage of firms engaged in merchanting activities as well as the size of their sales relative to the rest of the economy.

Figure 4
SIBS Question 35

Question 35. In 2012 [2009], did your enterprise buy and subsequently sell any goods outside of Canada without them entering Canada?

Yes ☐ No ☐

If yes, what percentage of your enterprise's total sales revenues did this represent?

Arrangement 2: Goods for processing and factoryless goods production

As a first step, the SIBS dataset is limited to only those units that have head offices in Canada. The rationale behind this constraint is to eliminate entities which might be better suited being classified to the production processes of other countries. This is done using Question 10 of the SIBS questionnaire.

Figure 5
SIBS Question 10

Question 10. Where is your enterprise's head office located?

Check **only one**.

- ☐ **a. Canada**
- ☐ b. United States
- ☐ c. Europe
- ☐ d. Asia Pacific
- ☐ e. All other countries

Responses to Question 14 in the SIBS survey were then used to conduct an analysis of the pervasiveness of goods sent abroad for processing and factoryless goods production in Canada. This provides a potential estimate of these arrangements by identifying those enterprises which have head offices in Canada and produce goods abroad. Goods sent abroad for processing consist of those enterprises that produce a unique good partly in Canada and partly abroad. The SIBS is able to identify the group of enterprises with production facilities both in and outside of Canada, but provides no additional information on whether goods are sent abroad for processing or whether different goods are produced in Canada and abroad. Goods sent abroad for processing would represent a subset of this group of enterprises, but without additional knowledge it is not possible to determine its size. This group of enterprises with the potential to engage in the goods sent for processing arrangement can be estimated by singling out companies who have production both inside and outside of Canada while FGPs can be further singled out by limiting the analysis to production only outside of Canada. Question 14 can further constrain the list of potential FGPs by limiting the analysis to those units which have research and development activity in Canada, which acts as a proxy for intellectual property products (IPP) ownership.

Figure 6
SIBS Question 14

Question 14. In 2012, indicate which of the following business activities were undertaken by your enterprise in Canada and outside of Canada?

	Performed in Canada		Performed outside of Canada		
Business activities	Within your enterprise	Outsourced (contracted out)	Within your enterprise	Outsourced (contracted out)	Does not apply
Production of goods	A	A	B	B	
Research and development	C	C			

From Question 14 above, a company will be considered to potentially engage in the goods sent abroad for processing arrangement if it falls in both Area A and Area B. This should be seen as a potential "upper bound" estimate from the survey as it will include units that outsource all of their production both in Canada and abroad as well as companies that produce certain distinct products abroad and others within Canada. Moreover, the added constraint that the good must return back to the resident economy is not accounted for in the SIBS survey. Potential FGP units will fall in Area B but not in Area A. They will further be constrained by adding the condition that they must also fall in Area C.

Analysis

Arrangement 1: Merchanting

Frequency by industry

Question 35 of the SIBS is first used to examine the frequency of merchanting in Canada based on the number of enterprises taking part in this global production arrangement. Table 1 shows the weighted percentage of firms who answered yes to this question in 2009 and 2012. In 2009, 2.0% of Canadian firms engaged in merchanting activities. In 2012, this increased to 5.0%.

Table 1
Merchanting by industry

		2009			2012		
		Yes	No	Total	Yes	No	Total
NAICS	Industry description	percent					
31-33	Manufacturing	6.9	93.1	100.0	6.4	93.6	100.0
41	Wholesale trade	x	x	x	14.2	85.8	100.0
Other	Other	0.8	99.2	100.0	4.3	95.7	100.0
Total	Total	2.0	98.0	100.0	5.0	95.0	100.0

x Wholesale trade is suppressed to meet confidentiality requirements of the Statistics Act.

Analysis of economic variables

Question 35 also asks for the percentage of sales attributed to the enterprise's merchanting activities. This allows for the calculation of an estimate of total merchanting sales by exploiting the sales data from the T2 dataset.

$$\textit{weighted merchanting sales}_i = \textit{unweighted sales}_i \times \textit{SIBS final weight}_i \times \%\ \textit{of merchanting sales}$$

where i is the individual unit.

Table 2
Merchanting sales by industry, percentage of sales attributable to merchanting activity

		2009	2012
NAICS	Industry description	% sales from merchanting	
31-33	Manufacturing	5.8	1.9
41	Wholesale trade	x	0.5
Other	Other	0.4	2.6
Total	Total	1.9	2.0

x Wholesale trade is suppressed to meet confidentiality requirements of the Statistics Act.

Table 2 shows the percentage of sales attributable to merchanting activity in both 2009 and 2012. In 2009, weighted merchanting sales accounted for 1.9% of total economy-wide sales while in 2012 merchanting sales increased to 2.0% of total economy-wide. In both 2009 and 2012, merchanting made up a small yet non-negligible portion of the Canadian economy. One notable difference is the decrease in the proportion of manufacturers engaged in the activity.

Arrangement 2: Goods sent abroad for processing and factoryless goods production

Frequency by industry

As a first step in determining an estimate of companies engaged in the goods sent abroad for processing arrangement, and it's extreme case of factoryless goods production in Canada, the constraint that the enterprise's Head Office must be in Canada was used and the location of the enterprise's goods production was examined using question 14 of the SIBS.

Table 3 shows that, in 2012, 38.2% of Canadian companies were goods producing with Canadian head offices. The majority of these units were found in the manufacturing sector of the economy (80.4%). 32.3% had production facilities exclusively in Canada while the remaining 5.9% of these companies had production facilities both in Canada and abroad. The goods sent abroad for processing arrangement involves companies who outsource at least some of their production activity to another country. This last figure therefore represents a potential "upper-bound" estimate of this production arrangement in Canada. Out of the Canadian companies surveyed in the SIBS, roughly 5.9% were potentially engaged in some sort of international processing arrangement in 2012. This percentage was 4.1% in 2009.

Within this estimate are those companies at the extreme end of the global processing arrangement, namely, FGPs who outsource 100% of their production abroad. An estimate of this arrangement can be obtained by only considering those companies that have head offices in Canada with production exclusively outside of Canada. The last rows of tables 3 and 4 below give an estimate of potential FGPs as being 1.9% of the Canadian economy in 2012 and 0.6% in 2009.

One main difference between the industry distribution of FGPs in 2009 and 2012 is the relatively smaller proportion of wholesale units found in 2009. In 2012, 6.5% of the wholesale units had production exclusively outside of Canada while the percentage in 2009 is too small to show due to confidentiality issues. There could be many reasons for this change including an increase in the amount of FGPs being classified as wholesalers.[6]

Table 3
Distribution of SIBS enterprises by industry and location of production, 2012

				Goods producing units with Canadian head offices		
	Total surveyed companies	Canadian head offices	Goods producing units with Canadian head offices as % of total	Exclusively in Canada as % of total	Both inside and outside of Canada as % of total	Exclusively outside of Canada as % of total
Industry grouping			percent			
31-33 Manufacturing	100.0	83.3	80.4	68.9	11.5	0.3
41 Wholesale trade	100.0	84.1	46.1	35.2	10.9	6.5
Other	100.0	91.4	26.6	22.8	3.7	1.6
Total	100.0	89.2	38.2	32.3	5.9	1.9

Table 4
Distribution of SIBS enterprises by industry and location of production, 2009

				Goods producing units with Canadian head offices		
	Total surveyed companies	Canadian head offices	Goods producing units with Canadian head offices as % of total	Exclusively in Canada as % of total	Both inside and outside of Canada as % of total	Exclusively outside of Canada as % of total
Industry grouping			percent			
31-33 Manufacturing	100.0	88.2	84.5	71.4	13.1	0.5
Other	100.0	95.4	37.8	35.7	2.0	0.6
Total	100.0	94.0	46.4	42.3	4.1	0.6

6. See Appendix 1 for issues surrounding the classification of FGPs.

Analysis of economic variables

Linking SIBS and tax data allows for the examination of the potential size of these production arrangements with respect to various macroeconomic and financial variables. Because an accurate estimate of the goods sent abroad for processing arrangement cannot be ascertained from the SIBS dataset, this analysis will look only at the size of the assets, profits and employment numbers associated with the factoryless goods production arrangement. Before analyzing the administrative data the financial variables were weighted using the associated SIBS final weights,

$$weighted\ variable_i = unweighted\ variable_i \times SIBS\ final\ weight_i$$

where *i* is the individual enterprise.

When turning to companies that outsource all of their production processes, it appears that this production arrangement has increased between 2009 and 2012, although the arrangement continues to be rather small. In 2009, for instance, assets of these companies represented 0.1% of total assets while they jumped to 0.7% in 2012. Moreover, profits and employment increased from 0.2% to 2.2% and 0.2% to 2.6% respectively.

Table 5
Potential factoryless goods production, financial variables by industry

Industry description	2009			2012		
	Profits	Assets	Employment	Profits	Assets	Employment
	percent					
Manufacturing	0.3	0.1	0.3	0.7	1.9	1.0
Wholesale trade	x	x	x	2.9	2.4	3.9
Other	0.2	0.1	0.2	2.4	0.5	3.0
Total	0.2	0.1	0.2	2.2	0.7	2.6

x Wholesale trade is suppressed to meet confidentiality requirements of the Statistics Act.

Further constraints: Considering intellectual property products in 2012

In order to be considered an FGP, the enterprise in question must own the intellectual property product associated with the output. In the analysis above, all companies with head offices in Canada and exclusively offshore production were considered to be potential FGPs. It may be the case that some of these units are not the true owners of the IPP and therefore should not be considered as part of this category. To get a better sense of the prevalence of this production arrangement in Canada a further constraint was added. As a proxy for IPP ownership, the location of research and development work was used. Only those units which reported performing research and development within Canada were deemed to own the IPP for the products they were selling and therefore were considered potential FGPs. Moreover, each company identified in section a) was further examined to determine whether or not they were truly goods producing. These extra constraints reduce the list of potential FGPs from 1.9% to 1.4% in 2012. With this further reduction, potential FGPs now make up roughly 1.5% of profits, 0.4% of assets and 1.9% of employment of the total economy in 2012.

Table 6
Financial variables by industry, 2012 (units with research and development in Canada)

Industry description	Profits	Assets	Employment
	percent		
Manufacturing	0.7	1.9	1.0
Wholesale	1.1	0.4	1.5
Other	1.8	0.3	2.2
Total	1.5	0.4	1.9

It should be further stressed that this 1.4% of units represents an estimate of potential FGPs which can be derived from the SIBS. There could be a variety of reasons why some of these units would not be truly considered factoryless producers. Firstly, some of these companies may have production facilities in Canada despite their answers given on the SIBS which asked only about production in a specific year. Secondly, some of the units undertake FGP activities, but also have substantial wholesaling activities. It is unclear as to when such a firm should be considered a factoryless goods producer rather than a wholesaler.

Conclusions and implications for Canada

As globalization increases, so too does the need to better understand how to measure it. Some global production arrangements are well understood, such as goods sent abroad for processing and merchanting, while others, such as factoryless goods production, still remains somewhat challenging[7]. This paper examined the prevalence of these production arrangements in the Canadian economy using responses to a subset of questions on the SIBS survey.

With regards to goods sent abroad for processing, this preliminary analysis revealed that this production arrangement may be fairly common. Companies that have the potential to engage in this activity represented between 4% and 6% of all companies in both 2009 and 2012.

With regards to the extreme case of factoryless goods production as well as merchanting, this analysis suggests that these forms of production arrangements remain rather small in Canada, but appear to be increasing over time. For FGPs, it is important that issues surrounding their proper classification and treatment be resolved and proper guidance be given. This is especially true given the indications that this global production arrangement is on the rise in Canada.

Lastly, It is important to note that the SIBS questionnaires was not designed to specifically identify these types of activities and therefore the results provide only a broad indication of their occurrence in Canada. Further, more targeted efforts (specifically designed questions) will be required in the future to get a more accurate picture of these production arrangements.

7. See Appendix 1

Appendix 1 — International work and recommendations

The case of merchanting is straightforward with statistical agencies agreeing on how it should be treated. Essentially, the purchase of the good by the domestic firm should be recorded as a negative export for that firm's economy while the re-sale of the good is reported as a positive export. The net effect will appear in the balance of payments as an export of goods.[8,9] As an example of this, take the book example from the previous section. Suppose Firm A in Figure 1 purchased the books for $20 and then subsequently sold the books for $40 to Customer C. This would be recorded as a net export of $20 by the balance of payments compilers in country A. Moreover, the margin on the merchanting sale ($20) will be counted as an output of a service in the resident countries production account.

Table 7
Balance of Payments of country A under merchanting

	Country A
	dollars
Exports of goods	20
Net exports of goods under merchanting	20
Goods acquired under merchanting	-20
Goods sold under merchanting	40

Table 8
Production Account of country A under merchanting

	Country A
	dollars
Gross output	20
Goods	0
Services	20

Further challenges arise, however, when considering FGPs in the context of industrial classification – specifically whether they should be considered wholesalers (following the International Standard Industrial Classification 4) or as a type of manufacturing entity (following some recent thinking on the matter). The current version of SNA08 and BPM6 argue for the former, but at the same time raise some questions with their rationale. More recently others have argued that this definition is too restrictive and does not reflect the economic realities of the FGP arrangement.

The International Standard Industrial Classification (ISIC), which is used by most of the world with the notable exception of North American countries, treats FGPs as being part of the wholesale trade sector. An FGP would be considered a manufacturer if and only if it owned the material inputs used in the production process.

> *"A principal who completely outsources the transformations process should be classified into manufacturing if and only if it owns the input materials to the production process – and therefore owns the final output."*[10]
>
> - Paragraph 144 of ISIC

A number of National Accounts compilers see the ISIC treatment of FGPs as being problematic for a variety of reasons. Firstly, a firm could change industry classifications by simply changing how they acquire input materials. For example, a company that is responsible for producing a good (and owning the intellectual property for the product) but outsources the production process to a firm in another country would be considered a manufacturer if they also provided the material inputs to the production process. If the company decided that it would be more efficient to allow the foreign company to acquire the material inputs on its own (without making any other meaningful changes),

8. System of National Accounts (SNA 2008).
9. The use of negative and positive exports is the process by which the SNA records the net export only. The difference between the sale price and purchase price should be recorded as the resident country's exports.
10. United Nations, Expert Group Meeting on International Statistical Classifications, Prepared by the Task Force on Global Production. Issue Paper on Classifying Factoryless Goods Producers (May 2013).

it would then switch from being classified as a manufacturer to being categorized as a wholesaler. This could have important impacts on the measurement of manufacturing and wholesale activity in economies where there might be considerable FGP activity. Secondly, classifying FGPs under wholesale trade may not capture their true economic impact and may not properly reflect the importance of the intellectual property inputs in the production process. For such reasons, there has been a growing consensus to classify FGPs as a type of manufacturer.

A substantive amount of research has been undertaken regarding the issues surrounding the classification of FGPs and the ISIC recommendations. Notably, the United Nations ECE, Task Force on Global Production (TFGP) and the Economic Classification Policy Committee (ECPC) of the Office of Management and Budget (OMB) in the United States have analyzed the issue extensively. In their view, the ISIC recommendations require a review, both conceptually and practically. The general consensus of this researc . suggests that, rather than using the ownership of input materials as a classification rule, the ownership of intellectual property products (IPP) should be used.

According to the NAICS[11] 2012 supporting documents produced by North American countries, the characteristics of FGPs (and the criteria for their inclusion in the manufacturing sector) should be[12]:

- owns rights to the intellectual property or design as a key input;
- may or may not own the input material;
- does not directly own production facilities;
- does not perform physical transformation activities on the product;
- owns the final product produced by manufacturing service providers; and
- is responsible for the distribution of the final product.

The United States National Account compilers were planning to incorporate this classification change in 2017; however, at the time of writing this paper, that project had been delayed.

Although Statistics Canada agrees with the treatment of merchanting and FGPs presented in this section, the agency currently does not measure either phenomenon.

11. The North American Industrial Classification System is a classification system based on production which is used by Canada, the United States and Mexico.

12. Ribarsky, Jennifer August 2012. Factoryless Manufacturers: Classification and Implementation Challenges. Prepared for the 32nd General Conference of the International Association for Research in Income and Wealth. Session 8A: How to Capture Multi-Nationals in National Accounts.

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